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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,159	10/14/2005	Tsuyoshi Nakamura	SHIGA7.030APC	9070
20995 7590 12/10/2007 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			EXAMINER EOFF, ANCA	
			ART UNIT 1795	PAPER NUMBER
			NOTIFICATION DATE 12/10/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com  
eOAPilot@kmob.com

## Office Action Summary

Application No.	Applicant(s)	
10/553,159	NAKAMURA, TSUYOSHI	
Examiner	Art Unit	
Anca Eoff	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10/14/2005, 05/04/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/14/2005, 05/04/2007.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1-11 are pending in the application.
2. The foreign priority document JP 2003-114044, filed on April 18, 2003 was received and acknowledged. However, in order to benefit of the earlier filing date, a certified English translation is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraph of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2 and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Niikura et al. (US Patent 6,106,994).

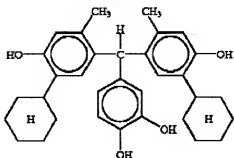
With regard to claims 1-2 and 6, Niikura et al. disclose a composition comprising an alkali-soluble resin (A) (column 2, lines 61-62). The alkali-soluble resin (A) can be a novolac resin obtained from a phenol compound, such as m-cresol, p-cresol and an aldehyde, such as formaldehyde (column 7, lines 49-52).

Niikura et al. further disclose that low molecular weight fractions of novolak resin have been removed so the novolak resin free of low molecular weight compounds meets the limitation of the instant application.

With regard to claims 7-9, Niikura et al. further disclose that the composition comprises (B) a polyphenol diester produced by esterifying a polyphenol compound

having 2 to 10 phenolic hydroxyl groups with a naphthoquinone-diazidesulfonyl halide (column 2, lines 19-23 and lines 60-62).

Niikura et al. specifically disclose the esterification of the polyphenol compound of formula (I):



(I) with naphthoquinone-1,2-diazide-5-sulfonyl chloride (5-NQD) (Synthetic Example 4 in column 10, lines 47-67).

The esterification leads to a mixture comprising 87.36 % diester.

The compound of formula (I) has a molecular weight of 487 g/mol and is equivalent to the phenolic derivative with a molecular weight of 200 or more of claim 7 of the instant application.

The diester obtained in the esterification process of the compound of formula (I) with naphthoquinone-1,2-diazide-5-sulfonyl chloride (5-NQD) is equivalent to the compound of formula (II) of claim 8 of the instant application, where two of D<sup>1</sup>, D<sup>2</sup>, D<sup>3</sup> are naphthoquinone-1,2-diazidosulfonyl group, and the other substituents D<sup>1</sup>, D<sup>2</sup>, D<sup>3</sup> are hydrogen atoms, l=1, m=1 and n=0.

The compound of formula (I) above is bis(5-cyclohexyl-4-hydroxy-2-methylphenyl)-3,4-dihydroxyphenylmethane so the limitation of claim 9 is met.

5. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (US Pg-Pub 2003/0064319).

With regard to claims 1-6, Saito et al. disclose a composition comprising a novolak resin (A) (abstract). The novolak resin is obtained by addition condensation of aromatic compounds with phenolic hydroxyl groups, such as phenol, m-cresol, p-cresol with aldehydes (par.0022).

Saito et al. specifically disclose the synthesis of a cresol novolak resin, by the condensation of a mixture of 60 parts m-cresol and 40 parts p-cresol with formaldehyde. The low molecular weight fractions of the resin were removed by fractionation so the cresol novolak resin free of low molecular weight compounds meets the limitation of the instant application

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaedeli et al. (US Patent 6,146,793) in view of Niikura et al. (US Patent 6,106,994).

With regard to claim 10, Schaedeli et al. disclose a process for the lithographic treatment of a substrate by means of a multilayer technique, said process comprising the following steps:

- providing the substrate with a first coating of a film-forming aromatic polymer material;

- curing the first coating;
- applying a photoresist coating on the first coating;
- irradiating the coated substrate with radiation;
- subjecting the irradiated substrate to heat treatment;
- treating the irradiated substrate with an aqueous alkaline developer solution until the irradiated regions of the second coating are removed;
- treating the substrate with an oxygen-containing plasma until the first coating is completely removed on those places where it is not covered by the second coating (column 6, lines 10-30).

Schaedeli et al. disclose that the first coating (undercoat layer) are novolak resins, such as formaldehyde cresol or formaldehyde phenol novolaks (column 6, lines 31-36) but fail to disclose the amount of low molecular weight compounds present in the resins.

Niikura et al. disclose compositions comprising novolak resins obtained from a phenol compound, such as m-cresol, p-cresol and formaldehyde, which present high thermostability. The low molecular weight fractions of the novolak resin have been removed (column 7, lines 49-54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the novolak resins free of low molecular weight fractions as disclosed by Niikura et al. for the first undercoating (undercoat layer) of Schaedeli et al.

in order to take advantage of the high thermostability of the novolak resin (Niikura et al., column 7, lines 49-54).

With regard to claim 11, Schaedeli et al. disclose a multilayer structure comprising a substrate, a first coating (undercoat layer) and a second coating comprising a photoresist comprising a terpolymer and a photoacid generator.

Schaedeli et al. disclose that the first coating (undercoat layer) are novolak resins, such as formaldehyde cresol or formaldehyde phenol novolaks (column 6, lines 31-36) but fail to disclose the amount of low molecular weight compounds present in the resins.

Niikura et al. disclose compositions comprising novolak resins obtained from a phenol compound, such as m-cresol, p-cresol and formaldehyde, which present high thermostability. The low molecular weight fractions of the novolak resin have been removed (column 7, lines 49-54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the novolak resins free of low molecular weight fractions as disclosed by Niikura et al. for the first undercoating (undercoat layer) of Schaedeli et al. in order to take advantage of the high thermostability of the novolak resin (Niikura et al., column 7, lines 49-54).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Lin et al. (US Patent 6,344,305) disclose a bilayer imaging process where images obtained by patterning a top imaging layer are then transferred to the underlayer with an anisotropic reactive ion etching ( $O_2$ ,  $CO_2$ ,  $SO_2$ ). The underlayer materials include hard baked novolac resins.

Allen et al. (US Patent 5,985,524) disclose a bilayer imaging process where images obtained by patterning a top imaging layer are then transferred to the substrate through an organic underlayer. The preferred polymer for the organic underlayer is a diazonaphthoquinone (DNQ) novolac.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anca Eoff whose telephone number is 571-272-9810. The examiner can normally be reached on Monday-Friday, 6:30 AM-4:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a



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